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(71) Applicants

Nissan Motor Company,  
Limited,

No. 2, Takara-cho,  
Kanagawa-ku,  
Yokohama City,  
Japan.

(72) Inventors

Takao Ookubo,  
Yoshinobu Abe.

(74) Agents

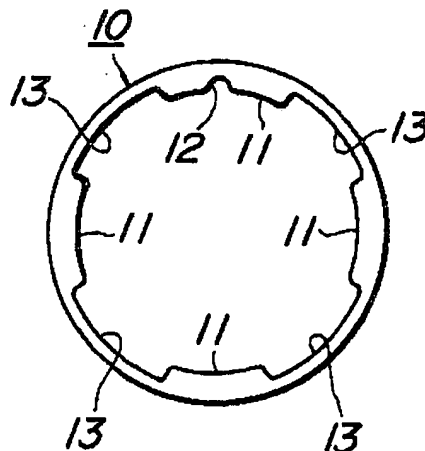
Marks & Clerk  
57-60 Lincoln's Inn Fields,  
London,  
WC2A 3LS.

(54) Mounting structure of wheel cap

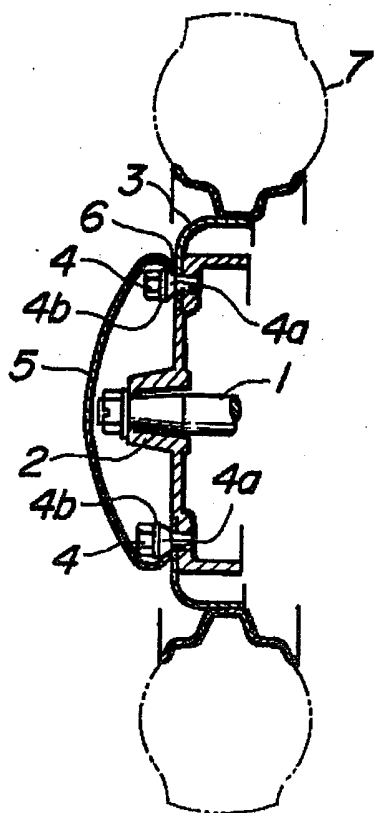
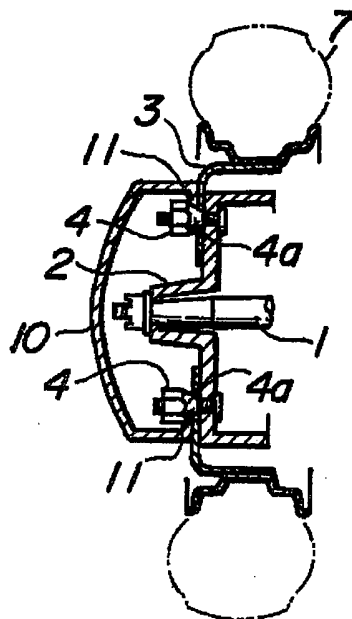
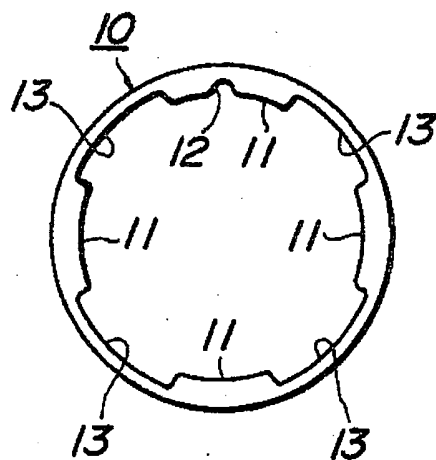
(57) A mounting structure of a wheel cap (10) for a wheel of a vehicle comprises a plurality of anchoring edges (11) intermittently formed in the circumferential periphery of the wheel cap (10), at least one of said anchoring edges being formed with a positioning groove (12) in the form of a notch.

The wheel cap (10) is rotated while being urged against a road wheel to engage the anchoring edges with wheel nuts and to engage the positioning groove with the wheel nut, thereby reducing any plastic deformation of the anchoring edges, preventing unintentional rotation and falling of the wheel cap normally mounted in position and releasing the stresses in the anchoring edges to prevent their permanent deformation in the normal position of the wheel cap.

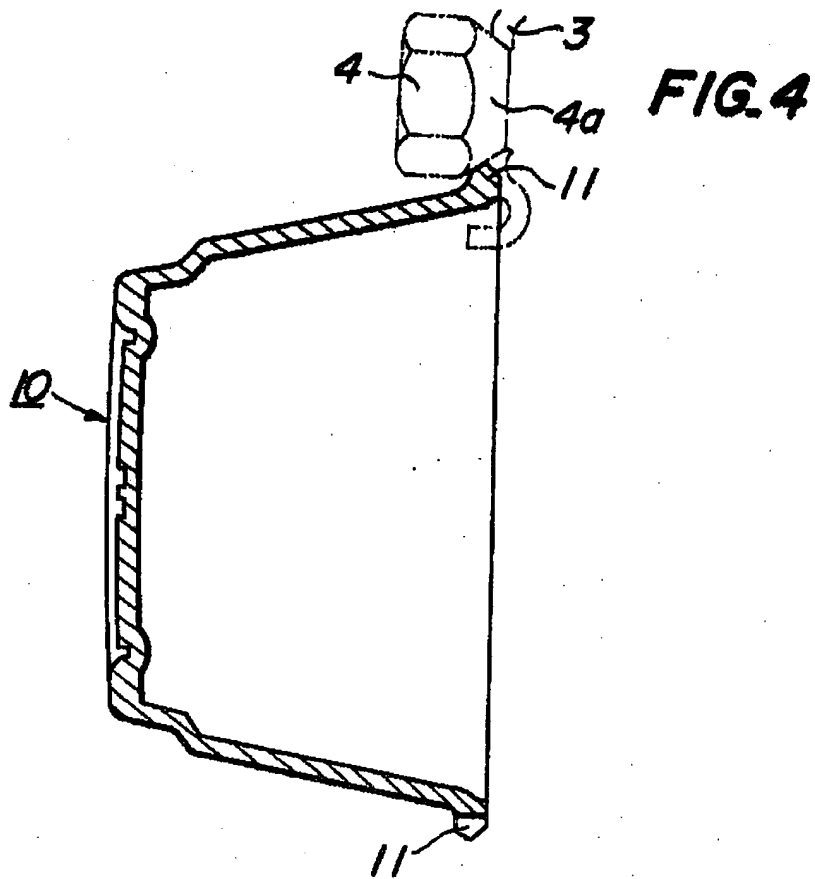
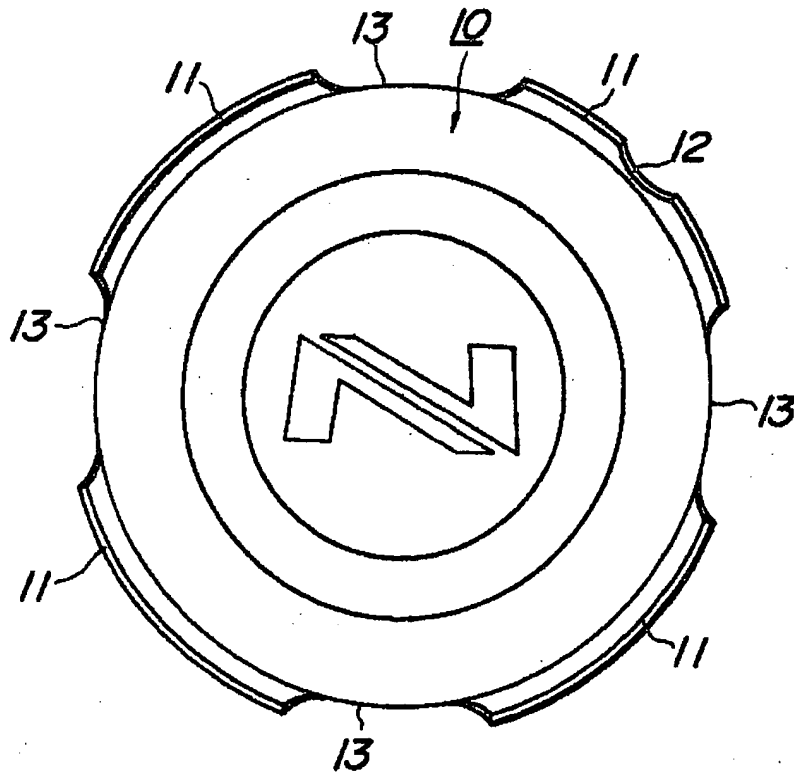
FIG.3



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**FIG. 1**PRIOR ART**FIG. 2****FIG. 3**

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**FIG. 5**

## SPECIFICATION

### Mounting structure of wheel cap

5 This invention relates to a mounting structure of a wheel cap for a wheel of a vehicle such as an automobile or the like.

Referring to Figure 1 illustrating a mounting structure of a wheel cap which has been generally employed, it comprises an axle 1 supporting a hub 2, a road wheel 3 fixed to the hub by means of a plurality of wheel nuts 4 and a wheel cap 5 anchored to the wheel nuts 4 for covering or ornamenting around the mounting portions of the hub 2. The wheel cap 5 has a circumferential periphery which is inwardly bent to form an anchoring edge 6 which engages tapering portions 4a of the wheel nuts 4 when the wheel cap 5 is urged in a direction substantially perpendicular to the axis of the road wheel 3, thereby fixing the wheel cap thereto.

With this arrangement, however, there has been a risk of plastic deformation of, or cracks in, the engaging portions of the anchoring edge 6 of the wheel cap 5 with the wheel nuts 4 because of the fact that the wheel cap 5 is urged toward and in the direction perpendicular to the axis of the road wheel 3 with the resilient deformation of the anchoring edge 6. Repeated mounting and dismounting of the wheel cap 5 together with the resilient deformation of the anchoring edge 6 for a long period of time result in an expansion of the anchoring edge 6 of the wheel cap 5 which is likely to remove unintentionally from the wheel nuts. In addition, the wheel nut is required to be formed with a tapering portion 4b on the head side in order to make it easier to anchor the wheel cap 5 to the wheel nut 4 by urging the wheel cap 5 to the nut 4. This may increase the cost of the nuts. Phantom lines indicate a tire.

It is an object of the invention to provide a mounting structure of a wheel cap, which eliminates all the disadvantages of the prior art and which comprises a plurality of anchoring edges intermittently formed in the circumferential periphery of the wheel cap, which are adapted to engage with, and disengage from, corresponding wheel nuts by rotating the wheel cap while being urged against a road wheel, thereby reducing the plastic deformation of the anchoring edges, preventing unintentional rotation and falling of the wheel cap normally mounted in position and releasing the stresses in the anchoring edges to prevent their permanent deformation in the normal position of the wheel cap.

In the accompanying drawings:-

Figure 1 is a sectional view illustrating a wheel cap mounting structure of the prior art as described above;

Figure 2 is a sectional view of the wheel cap mounting structure according to the invention;

Figure 3 is an elevation illustrating an inner side of a wheel cap shown in Figure 2;

Figure 4 is a sectional view of another embodiment of the invention; and

Figure 5 is a front elevation of the wheel cap shown in Figure 4.

Referring to Figures 2 and 3, a wheel cap 10 is

intermittently formed in its circumferential periphery with anchoring edges 11 which are radially inwardly bent and of the same number as that of wheel nuts. Both ends of these anchoring edges 11 are rounded so as to ride easily on the tapering portions 4a of the wheel nuts 4 by pushing the wheel cap 10 while being rotated.

Moreover, one of the anchoring edges 11 is formed at its center with a positioning groove 12 adapted to engage the tapering portion 4a of the wheel nut for preventing rotation of the wheel cap relative to the road wheel 3.

In mounting the wheel cap 10 with this arrangement, peripheral edges 13 having no anchoring edges of the wheel cap 10 are engaged with fixing portions of the wheel nuts 4 and the wheel cap 10 is rotated while being urged against the road wheel 3 so as to be deformed to bring the anchoring edges 11 riding on the tapering portions 4a of the wheel nuts. The wheel cap 10 is further rotated until the positioning groove 12 engages the tapering portion 4a of the wheel nut 4, whereby the wheel cap 10 is fixed in position.

In mounting and dismounting the wheel cap 10 according to this embodiment of the invention, therefore, the anchoring edges 11 of the wheel cap 10 engaging the wheel nuts are subjected to compressive forces which are caused by the pushing rotation of the wheel cap and advantageous in mechanical strength of the wheel cap, thereby remarkably reducing any change of the occurrence of plastic deformation of the anchoring edges 11. The positioning groove 12 of the anchoring edges 11. The positioning groove 12 of the wheel cap 10 in the normal position engages the tapering portion 4a of the wheel nut 4 to prevent the wheel cap 10 from rotating and hence from falling off due to an unintentional rotation thereof. In the normal position of the wheel cap, furthermore, the positioning groove 12 receives the wheel nut 4 to release the stresses in the respective anchoring edges 11, thereby preventing a permanent deformation of the anchoring edges 11.

Figure 4 and 5 illustrate a further embodiment of the invention, wherein the peripheral edges of a wheel cap 10 are anchored to the sides of the wheel nuts 4 radially inwardly facing an axle to cover only a hub 2. In this embodiment, therefore, the wheel cap is intermittently formed in its circumferential periphery with outwardly bent anchoring edges 11.

One of the anchoring edges 11 is formed with a positioning groove 12. The wheel cap 10 of this embodiment is the same in function and mounting and dismounting operation as that of the previously described embodiment.

As can be seen from the above description, the mounting structure according to the invention enables a wheel cap to engage with, and disengage from, wheel nuts by rotating it while being pushed causing forces acting upon intermittently formed anchoring edges in their buckling directions which are advantageous for their strength, thereby reducing the possibility of plastic deformation of the anchoring edges. In addition, the positioning groove in the anchoring edge engages the wheel nut in the

normal mounted position of the wheel cap to prevent it from unintentionally rotating, thereby eliminating a risk of falling of the wheel cap and further releasing the stresses in the anchoring edges  
5 by accommodating the wheel nut in the positioning groove to prevent the permanent deformation of the anchoring edges.

#### CLAIMS

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1. A mounting structure of a wheel cap comprising a plurality of anchoring edges intermittently formed in a circumferential periphery of said wheel cap to engage tapering portions of wheel nuts for

15 fixing a road wheel to a hub, at least one of said anchoring edges being formed with a positioning groove in the form of a notch engaging a tapering portion of the wheel nut, thereby fixing said wheel cap in position by rotating it with its peripheral  
20 edges having no anchoring edges abutting against fixing portions of said wheel nuts to engage said anchoring edges with said tapering portions of the wheel nuts and to engage said positioning groove with said tapering portion of the wheel nut.

25 2. A mounting structure as set forth in claim 1, wherein said anchoring edges are intermittently formed by radially inwardly bending said circumferential periphery of said wheel cap, which engage tapering portions of said wheel nuts facing radially  
30 outwardly of said cap.

3. A mounting structure as set forth in claim 1, wherein said anchoring edges are intermittently formed by radially outwardly bending said circumferential periphery of said wheel cap, which engage  
35 tapering portions of said wheel nuts facing radially inwardly of said cap.

4. A mounting structure of a wheel cap substantially as described with reference to, and as illustrated in, Figures 2 and 3, or Figures 4 and 5 of the  
40 accompanying drawings.

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